What is claimed is:

1. A method for detecting Venezuelan equine encephalitis virus ("VEE") using a genetically biotinylated single chain fragment variable antibody ("scFv Ab"), comprising:

    (a) reacting the genetically biotinylated scFv Ab with a sample containing VEE for observing antigen-binding activity; and

    (b) analyzing the reactant by a system consisting of an immunofiltration-enzyme assay ("IFA") with a light addressable potentiometric sensor ("LAPS").

2. The method of claim 1, wherein said genetically biotinylated scFv Ab is a genetically streptavidin-binding peptide tagged recombinant biotinylated scFv Ab.

3. The method of claim 2, wherein said biotinylated scFv Ab displays high streptavidin-binding activity.

4. The method of claim 2, wherein said IFA assay comprises the steps of:

    (a) preparing an immunocomplex sandwich, said sandwich consisting of VEE, biotinylated antibody, fluoresceinated polyclonal antibody and streptavidin;

    (b) capturing said sandwich by filtration on biotinylated membrane; and

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(c) detecting said captured sandwich by anti-fluorescein urease conjugate.

5. The method of claim 4, wherein a concentration ratio of biotinylated antibody to fluoresceinated polyclonal antibody of 250:500 (ng/spot) provides the highest signal to noise ratio with fixed concentration of VEE.